California Air Resources Board's
Emissions Inventory Series

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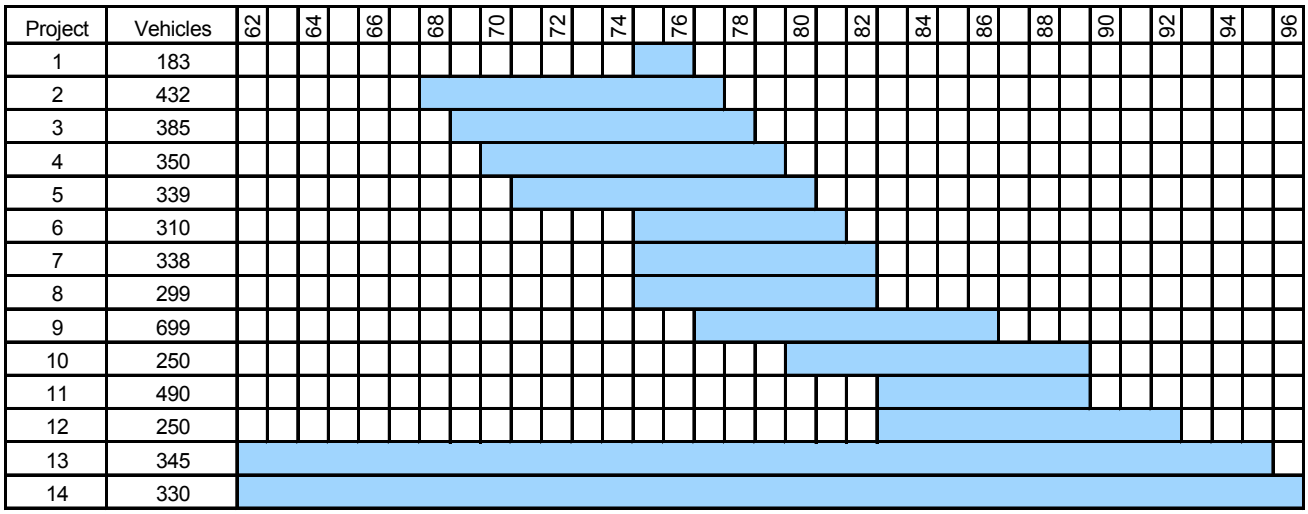
Light Duty Vehicle

SURVEILLANCE PROGRAMS

RANDOMLY TESTED VEHICLES: FOUNDATAION OF INVENTORY



Project	Vehicles
1	183
2	432
3	385
4	350
5	339
6	310
7	338
8	299
9	699
10	250
11	490
12	250
13	345
14	330

The Light Duty Vehicle Surveillance Projects (LDVSP), are performed by the staff of the Mobile Source Operations Division and serve as the foundation for inventory development. Fourteen projects have been completed to date and over 5,000 vehicles have been tested. Participants in the program are solicited at random from an area within a 100 mile radius of the Air Resources Board's (ARB) Haagen-Smit Laboratory (HSL) in El Monte. Vehicles are tested in an "as is" condition over numerous driving cycles (i.e. FTP and UC), and conditions. A subset of vehicles are repaired and retested to simulate the requirements of the Inspections and Maintenance or Smog Check program.

As can be seen in the graphic above, vehicles of the same model year are tested over several calendar years. This facilitates the estimation of emission control deterioration using "cohort" type trend analyses.

Inventory elements supported by Surveillance Include:

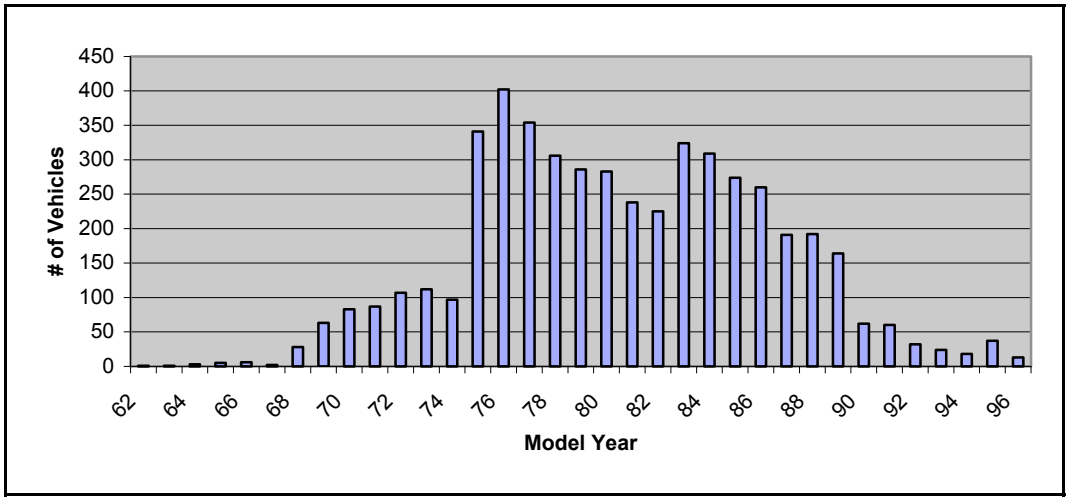
Basic Emission Rates
Speed Correction
Fuel Correction
Smog Check Benefits
Evaporative Emissions

Notable shortcomings of the program include:

Only tests So. Cal Cars
Low Capture Rates
Few Heavier Trucks
Few Old or New Vehicles
May be biased Sample

- Low Capture Rates

OVER 5,000 VEHICLES TESTED TO DATE



Model Year Distribution for all Programs

QUICK FACTS: LIGHT DUTY SURVEILLACE PROGRAM

Participants in ARB's Surveillance Programs are given between $150 and $200, the use of a rental car during testing, and the possibility of repair of their vehicle. Even with these incentives, the Surveillance Programs have never exceeded a sixteen percent capture rate. Low capture rates, coupled with the fact that the majority of vehicles are procured from within a twenty five mile radius of HSL have led some to suggest that the samples are biased.

Most Vehicles are procured from within a 25 mile radius of the ARB's Haagen-Smit Laboratory in El Monte.

It has been suggested that the Surveillances, and therefore the inventories, are biased toward clean vehicles in that people who tamper with their vehicle's emission control systems are unlikely to participate in a program sponsored by a regulatory agency. It has been equally argued that the Surveillance are biased toward procuring high emitting vehicles, in that people are believed to be more likely to participate if they believe they may receive free repairs.

A **cohort trend analysis** is an analysis performed over time using different vehicles with common or "cohort" characteristics. In the case of Surveillance, these characteristics are model year and emission control technology. In contrast, a **"panel"** trend analysis test the same vehicles over time. Panel trend analyses are used in assessing the benefits of the **Smog Check** Program.

Capture Rate is defined as the total number of participants divided by the total number or people solicited for participation.

SURVEILLANCE PROGRAM SUMMARY

Project	Test Dates	Total Vehicles	Passenger Cars	Light Duty Trucks	Light Duty Vehicles	Medium Duty	Capture Rate	Model Years
LDVSP 1	1976-1977	182	163	19				1975-1976
LDVSP 2	1977-1978	396	248	72	76			1968-1977
LDVSP 3	1978-1979	385	205	32	148			1968-1978
LDVSP 4	1979-1980	350	295	55				1970-1979
LDVSP 5	1980-1981	340	272	68				1971-1980
LDVSP 6	1981-1982	313	240	68		2		1975-1981
LDVSP 7	1982-1984	344	259	79		1		1975-1982
LDVSP 8	1984	299	239	59				1975-1982
LDVSP 9	1986-1987	701	601	98		2		1977-1986
LDVSP 10	1987-1988	250	203	47				1980-1989
LDVSP 11	1989-1990	490	302	188			6.1%	1983-1989
LDVSP 12	1992-1993	232	170	62			15.7%	1983-1992
LDVSP 13	1995-1997	345	267	62		16	14.0%	1962-1997
LDVSP 14	1997-1999	330	236	70		22	12.7%	1951-1996